

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 August 2005 (18.08.2005)

PCT

(10) International Publication Number
WO 2005/075837 A1

(51) International Patent Classification⁷: **F15D 1/10**, 1/04,
B03C 3/00, B01F 3/06, 5/06, B01D 45/00, 51/02, 50/00

(21) International Application Number:
PCT/AU2005/000160

(22) International Filing Date: 9 February 2005 (09.02.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2004900593 9 February 2004 (09.02.2004) AU

(71) Applicant (for all designated States except US): **INDIGO
TECHNOLOGIES GROUP PTY LTD** [AU/AU]; Unit
13, 43 Lang Parade, Milton, QLD 4604 (AU).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **TRUCE, Rodney**

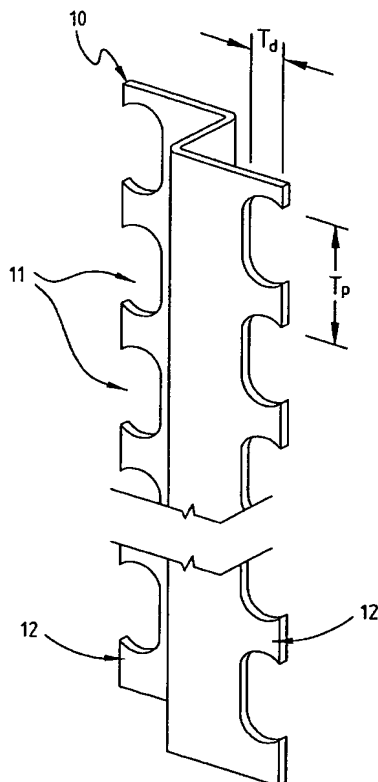
John [AU/AU]; 29 Douglas Street, Sherwood, QLD 4075 (AU). **WILKINS, John Walter** [AU/AU]; 26 Lewis Street, Camp Hill, QLD 4152 (AU). **NATHAN, Graham Jerrold** [AU/AU]; RMB 283, Learmonth Court, SA 5153 (AU). **KELSO, Richard Malcolm** [AU/AU]; 175 Stephen Terrace, Walkerville, SA 5081 (AU). **KALT, Peter Anthony Markus** [AU/AU]; 7/3A Hughes Avenue, Kensington, SA 5068 (AU).

(74) Agent: **CULLEN & CO.**; Level 26, 239 George Street, Brisbane, QLD 4000 (AU).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,

[Continued on next page]

(54) Title: **IMPROVED PARTICLE INTERACTIONS IN A FLUID FLOW**



(57) Abstract: Interaction between two different species of particle(s) in a fluid stream is promoted by generating turbulent eddies (1, 2) in a fluid stream. The turbulente eddies are designed to be of such size and/or intensity that the different sized particle(s) are entrained into the eddies to significantly different extents and forced to follow different trajectories (3, 4), increasing the likelihood of collisions and interactions. Optimum collision rates will occur for a system which maintains a Stokes Number (St) much less than 1 for one sized particle, and or order 1 or greater for the other sized particle. The invention has particular application in air pollution control, whereby agglomeration of fine particles into larger particles is promoted, subsequent to their removal.

WO 2005/075837 A1



TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CL, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.